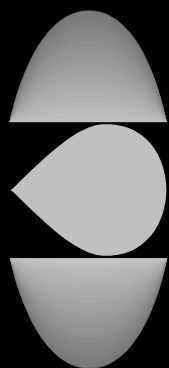




# **RISK MANAGEMENT PROGRAM GUIDANCE FOR OFFSITE CONSEQUENCE ANALYSIS**



**RMP SERIES**

This document provides guidance to the owner or operator of processes covered by the Chemical Accident Prevention Program rule in the analysis of offsite consequences of accidental releases of substances regulated under section 112(r) of the Clean Air Act. This document does not substitute for EPA's regulations, nor is it a regulation itself. Thus, it cannot impose legally binding requirements on EPA, States, or the regulated community, and may not apply to a particular situation based upon the circumstances. This guidance does not constitute final agency action, and EPA may change it in the future, as appropriate.

## TABLE OF CONTENTS

<u>Chapter</u>		<u>Page</u>
	Table of Potentially Regulated Entities .....	viii
	Roadmap to Offsite Consequence Analysis Guidance by Type of Chemical .....	x
1	Introduction .....	1- 1
	1.1 Purpose of this Guidance .....	1-1
	1.2 This Guidance Compared to Other Models .....	1-4
	1.3 Number of Scenarios to Analyze .....	1-4
	1.4 Modeling Issues .....	1-5
	1.5 Steps for Performing the Analysis .....	1-6
	1.5.1 Worst-Case Analysis for Toxic Gases .....	1-7
	1.5.2 Worst-Case Analysis for Toxic Liquids .....	1-7
	1.5.3 Worst-Case Analysis for Flammable Substances .....	1-8
	1.5.4 Alternative Scenario Analysis for Toxic Gases .....	1-8
	1.5.5 Alternative Scenario Analysis for Toxic Liquids .....	1-9
	1.5.6 Alternative Scenario Analysis for Flammable Substances .....	1-9
	1.6 Additional Sources of Information .....	1-10
2	Determining Worst-Case Scenario .....	2-1
	2.1 Definition of Worst-Case Scenario .....	2-1
	2.2 Determination of Quantity for the Worst-Case Scenario .....	2-3
	2.3 Selecting Worst-Case Scenarios .....	2-3
3	Release Rates for Toxic Substances .....	3-1
	3.1 Release Rates for Toxic Gases .....	3-1
	3.1.1 Unmitigated Releases of Toxic Gas .....	3-2
	3.1.2 Releases of Toxic Gas in Enclosed Space .....	3-2
	3.1.3 Releases of Liquefied Refrigerated Toxic Gas in Diked Area .....	3-3
	3.2 Release Rates for Toxic Liquids .....	3-4
	3.2.1 Releases of Toxic Liquids from Pipes .....	3-5
	3.2.2 Unmitigated Releases of Toxic Liquids .....	3-5
	3.2.3 Releases of Toxic Liquids with Passive Mitigation .....	3-7
	3.2.4 Mixtures Containing Toxic Liquids .....	3-11
	3.2.5 Release Rate Correction for Toxic Liquids Released at Temperatures Between 25 °C and 50 °C .....	3-12
	3.3 Release Rates for Common Water Solutions of Toxic Substances and for Oleum .....	3-14
4	Estimation of Worst-Case Distance to Toxic Endpoint .....	4-1

## TABLE OF CONTENTS (Continued)

<u>Chapter</u>	<u>Page</u>
5	Estimation of Distance to Overpressure Endpoint for Flammable Substances ..... 5-1
5.1	Flammable Substances Not in Mixtures ..... 5-1
5.2	Flammable Mixtures ..... 5-2
	Reference Tables of Distances for Worst-Case Scenarios ..... 5-4
<u>Table</u>	
	Neutrally Buoyant Plume Distances to Toxic Endpoint for Release Rate Divided by Endpoint, F Stability, Wind Speed 1.5 Meters per Second:
1	10-Minute Release, Rural Conditions ..... 5-4
2	60-Minute Release, Rural Conditions ..... 5-5
3	10-Minute Release, Urban Conditions ..... 5-6
4	60-Minute Release, Urban Conditions ..... 5-7
	Dense Gas Distances to Toxic Endpoint, F Stability, Wind Speed 1.5 Meters per Second:
5	10-Minute Release, Rural Conditions ..... 5-8
6	60-Minute Release, Rural Conditions ..... 5-9
7	10-Minute Release, Urban Conditions ..... 5-10
8	60-Minute Release, Urban Conditions ..... 5-11
	Chemical-Specific Distances to Toxic Endpoint, Rural and Urban Conditions, F Stability, Wind Speed 1.5 Meters per Second:
9	Anhydrous Ammonia Liquefied Under Pressure ..... 5-12
10	Non-liquefied Ammonia, Ammonia Liquefied by Refrigeration, or Aqueous Ammonia ..... 5-13
11	Chlorine ..... 5-14
12	Sulfur Dioxide (Anhydrous) ..... 5-15
	Vapor Cloud Explosion Distances for Flammable Substances:
13	Distance to Overpressure of 1.0 psi for Vapor Cloud Explosions of 500 - 2,000,000 Pounds of Regulated Flammable Substances ..... 5-16
6	Determining Alternative Release Scenarios ..... 6-1
7	Estimation of Release Rates for Alternative Scenarios for Toxic Substances ..... 7-1
7.1	Release Rates for Toxic Gases ..... 7-1
7.1.1	Unmitigated Releases of Toxic Gases ..... 7-1
7.1.2	Mitigated Releases of Toxic Gases ..... 7-4

## TABLE OF CONTENTS (Continued)

<u>Chapter</u>		<u>Page</u>
7.2	Release Rates for Toxic Liquids .....	7-6
7.2.1	Liquid Release Rate and Quantity Released for Unmitigated Releases .....	7-7
7.2.2	Liquid Release Rate and Quantity Released for Mitigated Releases .....	7-10
7.2.3	Evaporation Rate from Liquid Pool .....	7-10
7.2.4	Common Water Solutions and Oleum .....	7-14
8	Estimation of Distance to the Endpoint for Alternative Scenarios for Toxic Substances .....	8-1
9	Estimation of Release Rates for Alternative Scenarios for Flammable Substances .....	9-1
9.1	Flammable Gases .....	9-1
9.2	Flammable Liquids .....	9-2
10	Estimation of Distance to the Endpoint for Alternative Scenarios for Flammable Substances .....	10-1
10.1	Vapor Cloud Fires .....	10-1
10.2	Pool Fires .....	10-5
10.3	BLEVEs .....	10-6
10.4	Vapor Cloud Explosion .....	10-6
	Reference Tables of Distances for Alternative Scenarios .....	10-9
<u>Table</u>		
	Neutrally Buoyant Plume Distances to Toxic Endpoint for Release Rate Divided by Endpoint, D Stability, Wind Speed 3.0 Meters per Second:	
14	10-Minute Release, Rural Conditions .....	10-9
15	60-Minute Release, Rural Conditions .....	10-10
16	10-Minute Release, Urban Conditions .....	10-11
17	60-Minute Release, Urban Conditions .....	10-12
	Dense Gas Distances to Toxic Endpoint, D Stability, Wind Speed 3.0 Meters per Second:	
18	10-Minute Release, Rural Conditions .....	10-13
19	60-Minute Release, Rural Conditions .....	10-14
20	10-Minute Release, Urban Conditions .....	10-15
21	60-Minute Release, Urban Conditions .....	10-16

## TABLE OF CONTENTS (Continued)

<u>Chapter</u>		<u>Page</u>
	<u>Table</u>	
	Chemical-Specific Distances to Toxic Endpoint, D Stability, Wind Speed 3.0 Meters per Second:	
22	Anhydrous Ammonia Liquefied Under Pressure .....	10-17
23	Non-liquefied Ammonia, Ammonia Liquefied by Refrigeration, or Aqueous Ammonia .....	10-18
24	Chlorine .....	10-19
25	Sulfur Dioxide (Anhydrous) .....	10-20
	Neutrally Buoyant Plume Distances to Lower Flammability Limit (LFL) for Release Rate Divided by LFL:	
26	Rural Conditions, D Stability, Wind Speed 3.0 Meters per Second .....	10-21
27	Urban Conditions, D Stability, Wind Speed 3.0 Meters per Second .....	10-21
	Dense Gas Distances to Lower Flammability Limit:	
28	Rural Conditions, D Stability, Wind Speed 3.0 Meters per Second .....	10-22
29	Urban Conditions, D Stability, Wind Speed 3.0 Meters per Second .....	10-23
	BLEVE Distances for Flammable Substances:	
30	Distance to Radiant Heat Dose at Potential Second Degree Burn Threshold Assuming Exposure for Duration of Fireball from BLEVE .....	10-24
11	Estimating Offsite Receptors .....	11-1
12	Submitting Offsite Consequence Analysis Information for Risk Management Plan .....	12-1
12.1	RMP Data Required for Worst-Case Scenarios for Toxic Substances .....	12-1
12.2	RMP Data Required for Alternative Scenarios for Toxic Substances .....	12-2
12.3	RMP Data Required for Worst-Case Scenarios for Flammable Substances .....	12-3
12.4	RMP Data Required for Alternative Scenarios for Flammable Substances .....	12-3
12.5	Submitting RMPs .....	12-4
12.6	Other Required Documentation .....	12-4

## APPENDICES

Appendix A:	References for Consequence Analysis Methods .....	A-1
Appendix B:	Toxic Substances .....	B-1
B.1	Data for Toxic Substances .....	B-1
B.2	Mixtures Containing Toxic Liquids .....	B-10

## TABLE OF CONTENTS (Continued)

<u>APPENDICES</u>	<u>Page</u>
Appendix C: Flammable Substances .....	C-1
C.1 Equation for Estimation of Distance to 1 psi Overpressure for Vapor Cloud Explosions .....	C-1
C.2 Mixtures of Flammable Substances .....	C-1
C.3 Data for Flammable Substances .....	C-2
Appendix D: Technical Background .....	D-1
D.1 Worst-Case Release Rate for Gases .....	D-1
D.1.1 Unmitigated Release .....	D-1
D.1.2 Gaseous Release Inside Building .....	D-1
D.2 Worst-Case Release Rate for Liquids .....	D-1
D.2.1 Evaporation Rate Equation .....	D-1
D.2.2 Factors for Evaporation Rate Estimates .....	D-2
D.2.3 Common Water Solutions and Oleum .....	D-4
D.2.4 Releases Inside Buildings .....	D-5
D.3 Toxic Endpoints .....	D-7
D.4 Reference Tables for Distances to Toxic and Flammable Endpoints .....	D-8
D.4.1 Neutrally Buoyant Gases .....	D-8
D.4.2 Dense Gases .....	D-9
D.4.3 Chemical-Specific Reference Tables .....	D-10
D.4.4 Choice of Reference Table for Dispersion Distances .....	D-10
D.4.5 Additional Modeling for Comparison .....	D-12
D.5 Worst-Case Consequence Analysis for Flammable Substances .....	D-12
D.6 Alternative Scenario Analysis for Gases .....	D-13
D.7 Alternative Scenario Analysis for Liquids .....	D-15
D.7.1 Releases from Holes in Tanks .....	D-15
D.7.2 Releases from Pipes .....	D-17
D.8 Vapor Cloud Fires .....	D-18
D.9 Pool Fires .....	D-18
D.10 BLEVEs .....	D-21

**TABLE OF CONTENTS**  
**(Continued)**

<u>APPENDICES</u>	<u>Page</u>
D.11 Alternative Scenario Analysis for Vapor Cloud Explosions .....	D-23
Appendix E: Worksheets for Offsite Consequence Analysis .....	E-1
Worksheet 1. Worst-case Analysis for Toxic Gas .....	E-1
Worksheet 2. Worst-case Analysis for Toxic Liquid .....	E-2
Worksheet 3. Worst-case Analysis for Flammable Substance .....	E-5
Worksheet 4. Alternative Scenario Analysis for Toxic Gas .....	E-6
Worksheet 5. Alternative Scenario Analysis for Toxic Liquid .....	E-9
Worksheet 6. Alternative Scenario Analysis for Flammable Substance .....	E-13
Appendix F: Chemical Accident Prevention Provisions .....	F-1

## LIST OF EXHIBITS

<u>Exhibit</u>	<u>Page</u>
1 Required Parameters for Modeling .....	1-3
2 Generic Reference Tables of Distances for Worst-case Scenarios .....	4-3
3 Chemical-Specific Reference Tables of Distances for Worst-case Scenarios .....	4-3
4 Generic Reference Tables of Distances for Alternative Scenarios .....	8-2
5 Chemical-Specific Reference Tables of Distances for Alternative Scenarios .....	8-2
6 Reference Tables of Distances for Vapor Cloud Fires as Alternative Scenario for Flammable Substances .....	10-2
A-1 Selected References for Information on Consequence Analysis Methods .....	A-2
B-1 Data for Toxic Gases .....	B-2
B-2 Data for Toxic Liquids .....	B-4
B-3 Data for Water Solutions of Toxic Substances and for Oleum .....	B-7
B-4 Temperature Correction Factors for Liquids Evaporating from Pools at Temperatures Between 25 °C and 50 °C (77 °F and 122 °F) .....	B-8
C-1 Heats of Combustion for Flammable Substances .....	C-3
C-2 Data for Flammable Gases .....	C-6
C-3 Data for Flammable Liquids .....	C-9

## TABLE OF POTENTIALLY REGULATED ENTITIES

*This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated under 40 CFR part 68. This table lists the types of entities that EPA is now aware could potentially be regulated by this rule (see Appendix B of the “General Guidance for Risk Management Programs” for a more detailed list of potentially affected NAICS codes). Other types of entities not listed in this table could also be affected. To determine whether your facility is covered by the risk management program rules in part 68, you should carefully examine the applicability criteria discussed in Chapter 1 of the General Guidance and in 40 CFR 68.10. If you have questions regarding the applicability of this rule to a particular entity, call the EPCRA/CAA Hotline at (800) 424-9346 (TDD: (800) 553-7672).*

<b>Category</b>	<b>NAICS Codes</b>	<b>SIC Codes</b>	<b>Examples of Potentially Regulated Entities</b>
Chemical manufacturers	325	28	Petrochemicals Industrial gas Alkalies and chlorine Industrial inorganics Industrial organics Plastics and resins Agricultural chemicals Soap, cleaning compounds Explosives Miscellaneous chemical manufacturing
Petroleum refineries	32411	2911	Petroleum refineries
Pulp and paper	322	26	Paper mills Pulp mills Paper products
Food processors	311	20	Dairy products Fruits and vegetables Meat products Seafood products
Polyurethane foam	32615	3086	Plastic foam products
Non-metallic mineral products	327	32	Glass and glass products Other non-metallic mineral products
Metal products	331 332	33 34	Primary metal manufacturing Fabricated metal products

<b>Category</b>	<b>NAICS Codes</b>	<b>SIC Codes</b>	<b>Examples of Potentially Regulated Entities</b>
Machinery manufacturing	333	35	Industrial machinery Farm machinery Other machinery
Computer and electronic equipment	334	36	Electronic equipment Semiconductors
Electric equipment	335	36	Lighting Appliance manufacturing Battery manufacturing
Transportation equipment	336	37	Motor vehicles and parts Aircraft
Food distributors	4224 4228	514 518	Frozen and refrigerated foods Beer and wines
Chemical distributors	42269	5169	Chemical wholesalers
Farm supplies	42291	5191	Agricultural retailers and wholesalers
Propane dealers	454312	5171 5984	Propane retailers and wholesalers
Warehouses	4931	422	Refrigerated warehouses Warehouse storing chemicals
Water treatment	22131	4941	Drinking water treatment systems
Wastewater treatment	22132 56221	4952 4933	Sewerage systems Wastewater treatment Waste treatment
Electric utilities	22111	4911	Electric power generation
Propane users			Manufacturing facilities Large institutions Commercial facilities
Federal facilities			Military installations Department of Energy installations

## Roadmap to Offsite Consequence Analysis Guidance by Type of Chemical

Type of Chemical and Release Scenario	Applicable Sections and Appendices
<b>Toxic Gas</b>	
<p>Worst-Case Scenario</p> <ol style="list-style-type: none"> <li>1) Define Worst Case</li> <li>2) Select Scenario</li> <li>3) Calculate Release Rates <ul style="list-style-type: none"> <li>Unmitigated</li> <li>Passive Mitigation</li> <li>Refrigerated</li> </ul> </li> <li>4) Find Toxic Endpoint</li> <li>5) Determine Reference Table and Distance <ul style="list-style-type: none"> <li>Dense or Neutrally Buoyant Plume</li> <li>Chemical-Specific Tables (ammonia, chlorine, sulfur dioxide)</li> <li>Urban or Rural</li> <li>Release Duration</li> </ul> </li> </ol>	<p>Section 2.1 Sections 2.2 and 2.3</p> <p>Section 3.1.1 Section 3.1.2 Section 3.1.3 Appendix B (Exhibit B-1) Section 3.1.3, 3.2.3 Chapter 4 and Appendix B (Exhibit B-1) Chapter 4 Section 2.1 and Chapter 4 Section 2.1</p>
<p>Alternative Scenario</p> <ol style="list-style-type: none"> <li>1) Define Alternative Scenario</li> <li>2) Select Scenario</li> <li>3) Calculate Release Rates <ul style="list-style-type: none"> <li>Unmitigated (from tanks and pipes)</li> <li>Active or Passive Mitigation</li> </ul> </li> <li>4) Find Toxic Endpoint</li> <li>5) Determine Reference Table and Distance <ul style="list-style-type: none"> <li>Dense or Neutrally Buoyant Plume</li> <li>Chemical-Specific Tables (ammonia, chlorine, sulfur dioxide)</li> <li>Urban or Rural</li> <li>Release Duration</li> </ul> </li> </ol>	<p>Chapter 6 Chapter 6</p> <p>Section 7.1.1 Section 7.1.2 Appendix B (Exhibit B-1)</p> <p>Chapter 8 and Appendix B (Exhibit B-1) Chapter 8 Section 2.1 and Chapter 8 Section 7.1</p>

## Roadmap to Offsite Consequence Analysis Guidance by Type of Chemical (continued)

Type of Chemical and Release Scenario	Applicable Sections and Appendices
<b>Toxic Liquid</b>	
<p>Worst-Case Scenario</p> <ol style="list-style-type: none"> <li>1) Define Worst Case</li> <li>2) Select Scenario</li> <li>3) Calculate Release Rates <ul style="list-style-type: none"> <li>Releases from Pipes</li> <li>Unmitigated Pool Evaporation</li> <li>Passive Mitigation (dikes, buildings)</li> <li>Release at Ambient Temperature</li> <li>Release at Elevated Temperature</li> <li>Releases of Mixtures</li> <li>Temperature Corrections for Liquids at 25-50 °C</li> <li>Releases of Solutions</li> </ul> </li> <li>4) Find Toxic Endpoint <ul style="list-style-type: none"> <li>For Liquids/Mixtures</li> <li>For Solutions</li> </ul> </li> <li>5) Determine Reference Table and Distance <ul style="list-style-type: none"> <li>Dense or Neutrally Buoyant Plume (liquids)</li> <li>Dense or Neutrally Buoyant Plume (solutions)</li> <li>Chemical Specific Table (aqueous ammonia)</li> <li>Urban or Rural</li> <li>Release Duration (liquids)</li> <li>Release Duration (solutions)</li> </ul> </li> </ol>	<p>Section 2.1 Sections 2.2 and 2.3</p> <p>Section 3.2.1 Section 3.2.2 Section 3.2.3 Section 3.2.2, 3.2.3 Section 3.2.2, 3.2.3 Section 3.2.4 and Appendix B (Section B.2) Section 3.2.5 and Appendix B (Exhibit B-4) Section 3.3 and Appendix B (Exhibit B-3)</p> <p>Appendix B (Exhibit B-2) Appendix B (Exhibit B-3)</p> <p>Chapter 4 and Appendix B (Exhibit B-2) Chapter 4 and Appendix B (Exhibit B-3) Chapter 4 Section 2.1 and Chapter 4 Section 3.2.2 Chapter 4</p>

## Roadmap to Offsite Consequence Analysis Guidance by Type of Chemical (continued)

Type of Chemical and Release Scenario	Applicable Sections and Appendices
<b>Toxic Liquid</b>	
<p>Alternative Scenario</p> <ol style="list-style-type: none"> <li>1) Define Alternative Scenario</li> <li>2) Select Scenario</li> <li>3) Calculate Release Rates               <ul style="list-style-type: none"> <li>Unmitigated (from tanks and pipes)</li> <li>Active or Passive Mitigation</li> <li>Release at Ambient Temperature</li> <li>Release at Elevated Temperature</li> <li>Release of Solution</li> </ul> </li> <li>4) Find Toxic Endpoint               <ul style="list-style-type: none"> <li>For Liquids/Mixtures</li> <li>For Solutions</li> </ul> </li> <li>5) Determine Reference Table and Distance               <ul style="list-style-type: none"> <li>Dense or Neutrally Buoyant Plume (liquids/mixtures)</li> <li>Dense or Neutrally Buoyant Plume (solutions)</li> <li>Chemical-Specific Table (aqueous ammonia)</li> <li>Urban or Rural</li> <li>Release Duration (liquids/mixtures)</li> <li>Release Duration (solutions)</li> </ul> </li> </ol>	<p>Chapter 6 Chapter 6 Section 7.2 Section 7.2.1 Section 7.2.2 Section 7.2.3 Section 7.2.3 Sections 7.2.4 and 3.3 and Appendix B (Exhibit B-3)</p> <p>Appendix B (Exhibit B-2) Appendix B (Exhibit B-3)</p> <p>Chapter 8 and Appendix B (Exhibit B-2) Chapter 8 and Appendix B (Exhibit B-3) Chapter 8 Section 2.1 and Chapter 8 Section 7.2 Chapter 8</p>

## Roadmap to Offsite Consequence Analysis Guidance by Type of Chemical (continued)

Type of Chemical and Release Scenario	Applicable Sections and Appendices
<b>Flammable Substance</b>	
<p>Worst-Case Scenario</p> <ol style="list-style-type: none"> <li>1) Define Worst Case</li> <li>2) Select Scenario</li> <li>3) Determine Distance to Overpressure Endpoint               <ul style="list-style-type: none"> <li>For Pure Flammable Substances</li> <li>For Flammable Mixtures</li> </ul> </li> </ol>	<p>Sections 5.1 and 2.1 Sections 5.1, 2.2, and 2.3</p> <p>Section 5.1 Section 5.2</p>
<p>Alternative Scenario</p> <ol style="list-style-type: none"> <li>1) Define Alternative Scenario</li> <li>2) Select Scenario</li> <li>3) For Vapor Cloud Fires               <ul style="list-style-type: none"> <li>Calculate Release Rates (gases)</li> <li>Calculate Release Rates (liquids)</li> <li>Find Lower Flammability Limit (gases)</li> <li>Find Lower Flammability Limit (liquids)</li> <li>Dense or Neutrally Buoyant (gases)</li> <li>Dense or Neutrally Buoyant (liquids)</li> <li>Urban or Rural</li> <li>Release Duration</li> <li>Determine Distance</li> </ul> </li> <li>4) For Pool Fires</li> <li>5) For BLEVEs</li> <li>6) For Vapor Cloud Explosions</li> </ol>	<p>Chapter 6 Chapter 6</p> <p>Section 9.1 and Appendix C (Exhibit C-2) Section 9.2 and Appendix C (Exhibit C-3) Appendix C (Exhibit C-2) Appendix C (Exhibit C-3) Appendix C (Exhibit C-2) Appendix C (Exhibit C-3) Section 10.1 Section 10.1 Section 10.1 Section 10.2 and Appendix C (Exhibit C-3) Section 10.3 Section 10.4</p>

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